

Two New Species of Liotiinae (Gastropoda: Turbinidae) from the Philippine Islands

by

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Abstract. Two new gastropods of the turbinid subfamily Liotiinae are described: *Bathyliotina glassi* and *Pseudoliotina springsteeni*. Both species have been collected recently in tangle nets off the Philippine Islands.

INTRODUCTION

A number of new or previously rare species have been taken in recent years by shell fishermen using tangle nets in the Philippine Islands, particularly in the Bohol Strait between Cebu and Bohol. Specimens of the same two new species in the turbinid subfamily Liotiinae have been received from Charles Glass of Santa Barbara, California, and Jim Springsteen of Melbourne, Australia. Because these species are now appearing in Philippine collections, they are described prior to completion of a world-wide review of the subfamily, for which I have been gathering materials and examining type specimens in various museums. Two other species, *Liotina peronii* (Kiener, 1839) and *Dentarene loculosa* (Gould, 1859), also have been taken by tangle nets in the Bohol Strait but are not treated here.

Much of the material coming from Philippine tangle net sources comes from either of two localities: off Punta Engano, Mactan Island, Cebu (10°18'N, 124°01'E) and off Balicasag Island, S of Panglao, Bohol (9°31'N, 123°40'E). These localities are at opposite ends of the Bohol Strait and are separated by a distance of approximately 100 km. Precise locality information for material from Philippine tangle nets is impossible to obtain, because the shell fishermen work the entire area and do not provide detailed localities (Jim Springsteen, personal communication). The type localities of the two species described here are given simply as the Bohol Strait. Maximum depth for the Bohol Strait is indicated as 190 fathoms on U.S. Hydrographic Chart no. 14429, from which the coordinates cited above were taken. After conversion to metres, the depth range is therefore approximately 200-350 m for this material.

Holotypes are deposited in the Los Angeles County Museum of Natural History (LACM); additional para-

types are deposited in the LACM, the U.S. National Museum of Natural History, Washington (USNM), and the Australian Museum, Sydney (AMS). Additional material in less perfect condition of the first described species has been recognized in the collections of the USNM and the Museum National d'Histoire Naturelle, Paris (MNHN).

Family TURBINIDAE Rafinesque, 1815

Subfamily LIOTIINAE H. & A. Adams, 1854

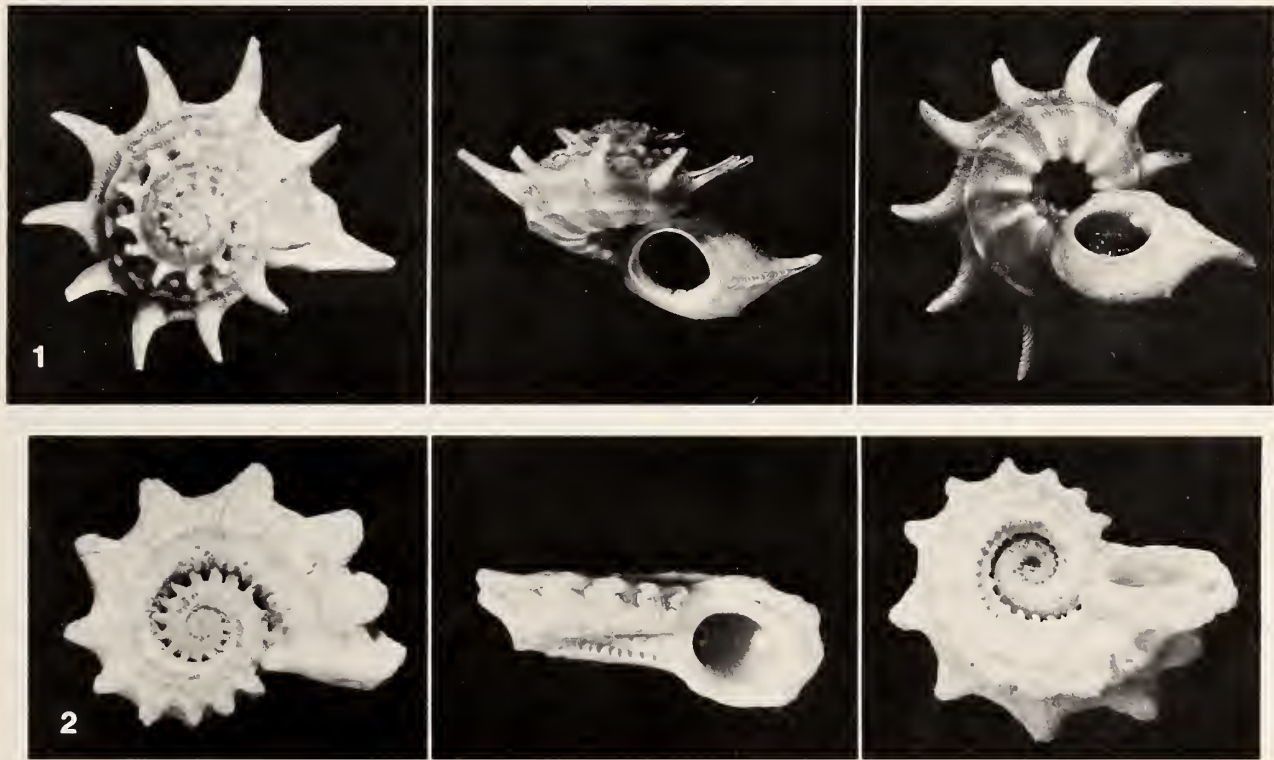
The subfamily is characterized by a turbiniform profile, nacreous interior, fine lamellar sculpture, an intritacalx in most genera, circular aperture, a multispiral operculum with calcareous beads, and a radula like that of other turbinid subfamilies.

Although previously treated by some authors as a full family, the Liotiinae have recently been ranked as a subfamily of Turbinidae (McLEAN, 1987).

Genus *Bathyliotina* Habe, 1961

Type species (original designation): *Liotia armata* A. Adams, 1861. Recent, Korea Strait.

Bathyliotina species are characterized by a broad umbilical opening, a spinose periphery, and greatly thickened final lip in which the aperture flares to its greatest extent, followed by deposition of lamellar layers that evenly decrease the diameter of the aperture to its final size. *Bathyliotina* is unique among liotiine genera in having the evenly decreasing lamellar layers forming the final expanded lip. *Liotina* Fischer, 1885, *Dentarene* Iredale, 1929, and *Austroliotia* Cotton, 1948, differ from *Bathyliotina* in having a greatly expanded lip followed by a constriction and then a secondary inflation to the final lip only slightly larger



Explanation of Figures 1 and 2

Figure 1. *Bathyliotina glassi* sp. nov. Holotype, LACM 2298. $\times 3.1$.

Figure 2. *Pseudohiotina springsteeni* sp. nov. Holotype, LACM 2300. $\times 5.3$.

than the diameter of the body whorl. Other differences are that *Liotina* has a broad cord bordering and narrowing the umbilicus, *Dentarene* has an umbilical ridge running into a twisted appendage of the inner lip, and *Austroliotia* Cotton, 1948, has a broadly open umbilicus not bordered by a major cord or a twisted ridge.

There are four previously described species of *Bathyliotina*: *B. armata* (A. Adams, 1861), *B. lamellosa* (Schepman, 1908), *B. schepmani* Habe, 1953, and *B. nakayasui* Habe, 1981. All occur offshore in the central Indo-Pacific.

Bathyliotina glassi McLean, sp. nov.

(Figure 1)

Description: Shell large for genus, depressed turbanate, yellowish white, maximum diameter 16.0 mm, whorls 4, periphery marked by pointed upturned spines, about 12 per whorl; aperture oblique, mature lip greatly expanded; shell surface marked by fine, sharp lamellar growth increments; lamellae sharp, not coalescing; intritacalx not evident. Protoconch diameter 200 μm , suture deeply impressed, first and second whorl rising above protoconch, third whorl descending, resulting in flat topped profile for early whorls. Early sculpture marked by strong axial lamellae and swellings at suture and periphery, those at

periphery forming spines in final two whorls. Spines not sealed anteriorly, lamellae that form spines broadly spaced at periphery. Spiral sculpture of two nodulose cords between suture and periphery. Spiral sculpture on base of one cord near outer edge, an angular cord defining umbilicus, and another within umbilicus. Axial sculpture corresponding to spines, forming pronounced ribs close to umbilicus and forming crenulate border on cord defining umbilicus and cord within umbilicus. Lip descending below suture on final fifth of last whorl, flaring to full extent of last spine and marked by lamellar increments of decreasing breadth until lip reaches its final resting stage. Aperture circular, nacreous within. Operculum with numerous volutions, bearing sharply projecting beads. Dimensions of holotype: height 8.5, maximum diameter 16.0 mm.

Type locality: Bohol Strait, Philippines, 90–180 m (see Introduction).

Type material: 5 specimens: 4 specimens from Glass & Foster collection and 1 specimen from Springsteen collection. Holotype, LACM 2298; 2 paratypes LACM 2299 (height 7.4, diameter 14.5; height 7.0, diameter 13.9 mm); 1 paratype USNM 784761 (height 8.2, diameter 15.0 mm); 1 paratype AMS (height 8.6, diameter 15.0 mm).

Referred material: 13 specimens, Glass & Foster collection. The following dead shells in poor condition: 4 specimens MNHN, Musorstom Expedition II, sta. DG 32, off N side Mindoro Island, Philippines (13°40'N, 120°54'E), 192–220 m; 4 specimens (plus 2 juveniles) USNM 278563, Albatross sta. 5262, off Maticot Point, W side Luzon, Philippines, 208 m; 1 specimen (plus 3 juveniles) USNM 287574, Albatross sta. 5398, off Gigantangan Island, NW side Leyte, Philippines.

Remarks: *Bathyliotina glassi* is the only member of the genus having long peripheral spines. It most resembles *B. schepmani* Habe, 1953 (name based on "*Liotia (Arene) armata* var." of SCHEPMAN, 1908:35, pl. 3, fig. 1), from northeastern Borneo, which is smaller, more elevated, has some intritacalx, has shorter peripheral spines and a basal cord that is weakly spinose. *Bathyliotina glassi* is exceeded in size only by *B. nakayasui* HABA (1981:109, figs. 1–3), which has short peripheral spines and strong clathrate sculpture.

The holotype has been previously figured without an identification (GLASS, 1984).

Etymology: The species is named after Charles Glass, of Santa Barbara, California, former editor of the *Conchologists of America Bulletin*.

Genus *Pseudoliotina* Cossmann, 1925

Type species (original designation): *Liotia sensui* Vidal, 1921. Upper Cretaceous, Europe.

Pseudoliotina species are characterized by an extremely flat spire, presence of intritacalx, nearly planispiral coiling, forming an extremely broad umbilicus, and thickened final lip. The aperture has a terminal constriction that produces a secondary final lip following the major thickening, similar to that noted above for the genera *Liotina*, *Dentarene*, and *Austroliotia*.

Pseudoliotina has previously been treated (KEEN, 1960) as a synonym of *Cyclostrema* Marryat, 1818, but is here distinguished from that genus. Species of *Cyclostrema* are larger than those of *Pseudoliotina* and do not produce a thickened final lip. *Cyclostrema* is restricted to two species in the Caribbean faunal province: the type species *C. cancellatum* Marryat, 1818, and *C. tortuganum* Dall, 1927, both of which were reviewed by ABBOTT (1950).

Only three species have the characters of the aperture defined above: the fossil type species, the broadly distributed Indo-Pacific species *P. discoidea* (Reeve, 1843), and the following new species.

Pseudoliotina springsteeni McLean, sp. nov.

(Figure 2)

Description: Shell large for genus, discoidal, yellowish white, maximum diameter 10.5 mm, whorls 3.5, periphery

marked by blunt double spines, 12 on final whorl; aperture only slightly oblique; mature lip thickened; whole surface of shell with fine, sharp lamellar growth increments, surface choked with intritacalx. Protoconch diameter 200 μ m, suture deeply impressed, teleoconch whorls rising above and below protoconch to maintain discoidal profile, except on final fifth of whorl preceding lip, where suture descends, placing final aperture below position of previous whorls. Discoidal growth results in extremely broad umbilicus, revealing basal side of early whorls. Final whorl in contact with penultimate whorl only at tips of spines. Spiral sculpture of single, faint, mid-dorsal carination, and weak, double, peripheral cords that produce the tight, double spination; base with two cords, outermost cord nodose to correspond to spines; inner cord smooth; umbilical edge with two crisply crenulate cords; umbilical wall with two additional, finely fluted cords. Umbilical wall also with fine spiral threads not apparent on rest of shell. Lip thickened, buttressed behind by swollen spiral cords; final swelling of lip separated from flaring extent of lip by deep pits. Aperture circular, nacreous within. Operculum unknown. Dimensions of holotype: height 3.9, maximum diameter 10.5 mm.

Type locality: Bohol Strait, Philippines, 200–350 m (see Introduction).

Type material: 4 specimens from Springsteen collection. Holotype, LACM 2300, 1 immature paratype LACM 2301 (height 2.6, diameter 7.6 mm); 1 paratype USNM 784726 (height 4.0, diameter 10.8 mm); 1 paratype AMS (height 4.3, diameter 10.3 mm).

Referred material: 3 specimens (1 immature) Glass & Foster collection. No additional material is known; specimens have not been recognized in any museum collections.

Remarks: The sculpture of *Pseudoliotina springsteeni* is so intricate that no other species is remotely similar. *Pseudoliotina discoidea* (Reeve, 1843) is smaller and has sculpture of spiral cords with no peripheral spines. The type species also lacks the strong peripheral spines of *P. springsteeni*.

Etymology: The name honors Jim Springsteen of Melbourne, Victoria, Australia, author of *Shells of the Philippines* (SPRINGSTEEN & LOBRERA, 1986).

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